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Craig S. Fischer

Date: 9-7-07

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**Application No. : 10/601,358**

**Appellant : TASH**

**Title : AUTOMATICALLY DEFORMABLE NOZZLE REGULATOR  
FOR USE IN A VENTURI PUMP**

**Filed : June 23, 2003**

**TC/A.U. : 3746**

**Examiner : DWIVEDI, V. S.**

**Docket No. : GTW-063-02**

**Customer No. : 49744**

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**REPLY BRIEF UNDER 37 CFR §41.41**

In response to the first Examiner's Answer dated June 11, 2007 and a subsequent (or second) Examiner's Answer dated July 13, 2007, the following remarks are presented. These remarks are presented in addition to, and not in place of, the remarks presented in the Appeal Brief dated January 25, 2007 which is of record. The Appellant would like to note that the second Answer of July 13, 2007 makes no reference whatsoever to the first Answer of June 11, 2007, or why a second Answer was issued, or what changed in the second Answer. After carefully comparing the second Answer to the first Answer, it appears that the only difference between the two Answers is that in the second Answer, on page 3, section (8) "Evidence Relied Upon," U.S. Patent No. 4,963,073 (Tash et al.) was

added since it was erroneously missing in the first Answer. Otherwise, the second Answer appears to repeat the first Answer verbatim. The Appellant would also like to note that section (9) “Grounds of Rejection” and section (10) “Response to Argument” of both Answers appear to repeat verbatim what was stated in the Final Office Action dated August 25, 2006.

### **REBUTTAL TO EXAMINER’S ANSWERS**

The Appellant’s rebuttal to the Examiner’s aforementioned Answers will now be presented.

#### **1.0 Rejection of Independent Claim 1 under 35 USC §102(b)**

Independent claim 1 was rejected under 35 USC §102(b) based on the rationale that the Strumbos reference (US Patent No. 3,605,672 – hereafter Strumbos) teaches all the features of this claim. The Appellant respectfully submits that this rejection of claim 1 is improper for the following reasons.

As discussed in detail in the aforementioned Appeal Brief, in claim 1 the **Appellant claims** a nozzle regulator which includes an **inner tubular cylinder, made of a deformable material, whose radius automatically decreases when a fluid flowing within the inner cylinder experiences a backpressure and whose radius automatically increases back to its original dimension when the backpressure is removed** from the fluid flowing within the inner cylinder. This results in the regulator’s ability to automatically determine when additional suction force is needed at its inlet, and automatically decrease its output area accordingly. The regulator makes these automatic adjustments to its output area based only on backpressure experienced by the fluid flowing within the inner cylinder of the regulator. The advantages of this feature are discussed on page 11 of the Appeal Brief.

As also discussed in detail in the Appeal Brief, **Strumbos teaches a steering control apparatus which includes a plurality of inflatable elastic sector members attached to the inside surface of a rigid outer shroud, where each sector member is**

**selectively inflated or deflated** under the **control** of a fluid circuit. Thus, in stark contrast to the Appellant's claimed nozzle regulator:

- (a) Strumbos teaches that a **different**, independently controlled source of pressurized fluid is required for **each** sector member, whereas the Appellant's claimed regulator requires **only one** source of pressurized fluid.
- (b) Strumbos teaches that **each** different source of pressurized fluid is pumped **inside** of a different inflatable sector member, thus serving to selectively inflate or deflate each sector member **like a balloon**. The pressurized fluids **do not** flow **within** the inner cylinder (created by the plurality of sector members) of the apparatus as is claimed by the Appellant.
- (c) Strumbos teaches that the **controlled** inflation or deflation of selected sector members produces a directional **steering force** on the craft/vehicle containing the apparatus. The Examiner contends in the Advisory Action dated October 10, 2006 that Strumbos teaches "pressure dependence on velocity [of the fluid flowing within the inner cylinder created by the plurality of sector members] automatically controls [the] radius [of this inner cylinder]." However, contrary to this contention, Strumbos actually teaches that **no** change occurs in the radius of the inner cylinder created by the plurality of sector members due to pressure changes in the fluid flowing **within** this inner cylinder. Rather, Strumbos teaches that the radius of this inner cylinder is controlled **only** by the aforementioned pressurized fluids which are selectively pumped **inside** the plurality of sector members. Furthermore, Strumbos teaches that the forces produced on the sector members by the fluid flowing within this inner cylinder act to **steer the craft/vehicle**. These forces clearly do **not** act to inflate or deflate the plurality of sector members (and hence, do not act to change the radius of the inner cylinder) since the fluid flowing within this inner cylinder is **different** than the pressurized fluids which are selectively pumped **inside** the sector members.

Thus, based on claim 1's novel language recited on pages 12 and 13 of the Appeal Brief, it should be clear that the Appellant's invention as claimed by claim 1 includes a

feature not taught by Strumbos, has advantages not appreciated by Strumbos, and therefore is patentably distinct from Strumbos. Consequently, the rejection of claim 1 under 35 USC §102(b) is improper.

## 2.0 Rejection of Dependent Claim 3 under 35 USC §102(b)

Dependent claim 3 was rejected under 35 USC §102(b) based on the rationale that Strumbos teaches the feature of this claim. The Appellant respectfully submits that this rejection of claim 3 is improper for the following reasons.

As discussed in detail in the aforementioned Appeal Brief, in claim 3 the **Appellant claims that the nozzle regulator of claim 1 is entirely constructed of a deformable material.** The advantages of this feature are discussed on page 13 of the Appeal Brief.

As also discussed in detail in the Appeal Brief and foregoing section 1.0, the steering control **apparatus taught by Strumbos necessarily includes a rigid outer shroud. Nowhere does Strumbos teach that the entire apparatus (i.e. including the shroud) is constructed of a deformable material.** In fact, based on the teachings of Strumbos, the **shroud is clearly required to be rigid** in order for the plurality of inflatable elastic sector members, which are attached to the inside surface of the shroud, to maintain their general shape and orientation to each other. The Appellant submits that if the shroud were constructed of a deformable material as claimed by the Appellant, Strumbos' apparatus would clearly become non-functional for its intended steering control purpose. **The Examiner cannot interpret the Strumbos apparatus as being made up of only the plurality of sector members** (and nothing else) since this is clearly not what is taught by Strumbos, and furthermore, this would make the apparatus non-functional for its intended steering control purpose.

Thus, based on claim 3's novel language recited on page 14 of the Appeal Brief, it should be clear that the Appellant's invention as claimed by claim 3 includes a feature not taught by Strumbos, has advantages not appreciated by Strumbos, and therefore is patentably distinct from Strumbos. Consequently, the rejection of claim 3 under 35 USC §102(b) is improper.

**3.0 Rejection of Independent Claim 9 under 35 USC §103(a) over Strumbos**

Independent claim 9 was rejected under 35 USC §103(a) based on the rationale that a combination of Strumbos and the well known prior art of Kort Nozzles teaches all the features of this claim. The Appellant respectfully submits that this rejection of claim 9 is improper for the following reasons.

As discussed in detail in the aforementioned Appeal Brief, in claim 9 the **Appellant claims an automatically deformable nozzle regulator which is constructed (i.e. entirely) of a deformable material.** The advantages of this feature are discussed on page 13 of the Appeal Brief.

As also discussed in detail in the Appeal Brief and foregoing section 2.0, the steering control **apparatus taught by Strumbos necessarily includes a rigid outer shroud. Nowhere does Strumbos teach that the apparatus is entirely (i.e. including the shroud) constructed of a deformable material.** In fact, based on the teachings of Strumbos, the **shroud is clearly required to be rigid for the reasons presented in section 2.0. The Examiner cannot interpret the Strumbos apparatus as being made up of only the plurality of sector members** (and nothing else) for the reasons presented in section 2.0. Incorporating the art of Kort Nozzles does not change or add anything to these teachings of Strumbos.

Thus, based on claim 9's non-obvious language recited on page 16 of the Appeal Brief, it should be clear that the Appellant's invention as claimed by claim 9 includes a feature not taught by Strumbos or the combination of Strumbos and Kort Nozzles, has advantages not appreciated by Strumbos or the combination of Strumbos and Kort Nozzles, and therefore is patentably distinct from Strumbos and the combination of Strumbos and Kort Nozzles. Consequently, the rejection of claim 9 under 35 USC §103(a) is improper.

**4.0 Rejection of Independent Claim 15 under 35 USC §103(a) over Tash in view of Strumbos**

Independent claim 15 was rejected under 35 USC §103(a) based on the rationale that the Tash reference (US Patent No. 4,963,073 – hereafter Tash) teaches all the features of this claim with the exception of the following feature: “an automatically deformable nozzle regulator in fluid communication with the venturi throat and cavity that automatically adjusts its output area to further decrease the pressure in the cavity.” However, the Examiner contends that Strumbos teaches this feature, and that it would have been obvious to incorporate this feature of Strumbos into Tash. The Appellant respectfully submits that this rejection of claim 15 is improper for the following reasons.

As discussed in detail in the aforementioned Appeal Brief, in claim 15 the **Appellant claims** an outlet side regulated venturi pump for pumping fluid which includes, on its outlet side, **an automatically deformable nozzle regulator that automatically adjusts its output area to further decrease pressure in a cavity located inside the pump.** The advantages of this feature are discussed on pages 16 and 17 of the Appeal Brief.

As also discussed in the Appeal Brief, **Tash teaches a pump which is entirely constructed of a rigid material such that no part of the pump is deformable.** **Nowhere does Tash teach that the pump includes an automatically deformable nozzle regulator** on its outlet side that automatically adjusts its output area to further decrease pressure in a cavity located inside the pump. Thus, **Tash does not teach an outlet side regulated pump.**

As discussed in foregoing section 1.0, granted the steering control apparatus taught by Strumbos includes a plurality of inflatable elastic sector members attached to the inside surface of a rigid shroud. However, **Strumbos teaches that each sector member is selectively inflated or deflated under the control of a fluid circuit which pumps an independently controlled source of pressurized fluid inside each sector member in order to produce a directional steering force** on the craft/vehicle containing the apparatus. Thus, **Strumbos also does not teach an outlet side regulated pump, nor does Strumbos teach an automatically deformable nozzle regulator that**

**automatically adjusts its output area to further decrease pressure in a cavity located inside the pump.**

Therefore, based on claim 15's non-obvious language recited on page 18 of the Appeal Brief, it should be clear that the Appellant's invention as claimed by claim 15 includes a feature not taught by Tash, or Strumbos, or the combination of Tash and Strumbos. It should also be clear that the Appellant's invention as claimed by claim 15 has advantages not appreciated by Tash, or Strumbos, or the combination of Tash and Strumbos. Thus, the Appellant's invention as claimed by claim 15 is patentably distinct from Tash, Strumbos, and the combination of Tash and Strumbos. Consequently, the rejection of claim 15 under 35 USC §103(a) is improper.

**5.0 Rejection of Claims 1, 3, 9, 11 and 15 under 35 USC §103(a) over Popov in view of Blackshear**

The Appellant first respectfully submits that, as discussed in detail on pages 22 and 23 of the Appeal Brief, a prima facie case of obviousness cannot be established because **Popov and Blackshear are non-analogous art**, both compared to each other and also compared to the subject application. As such, the Appellant respectfully submits that neither Popov nor Blackshear are relevant to the problems that the subject application is concerned with, nor would Popov or Blackshear have commended themselves to the attention of an inventor seeking to solve these problems.

**5.1 Independent Claim 1**

Independent claim 1 was rejected under 35 USC §103(a) based on the rationale that the Popov reference (US Patent No. 6,250,890 – hereafter Popov) teaches all the features of this claim with the exception of the following features: “the inner tubular cylinder is made of a deformable material,” and “when a fluid within the inner tubular cylinder experiences a backpressure, the second radius automatically decreases, but when the backpressure is removed the second radius automatically increases back to its original dimension.” However, the Examiner basically contends that the Blackshear reference (US Patent No. 3,667,069 – hereafter Blackshear) teaches these features, and that it would

have been obvious to incorporate these features of Blackshear into Popov. The Appellant respectfully submits that this rejection of claim 1 is improper for the following reasons.

As discussed in detail in the aforementioned Appeal Brief and in foregoing section 1.0, in claim 1 the **Appellant claims** a nozzle regulator which includes **an inner tubular cylinder, made of a deformable material, whose radius automatically decreases when a fluid flowing within the inner cylinder experiences a backpressure and whose radius automatically increases back to its original dimension when the backpressure is removed** from the fluid flowing within the inner cylinder. This results in the regulator's ability to automatically determine when additional suction force is needed at its inlet, and automatically decrease its output area accordingly. The advantages of this feature are discussed on page 11 of the Appeal Brief.

As also discussed in detail in the Appeal Brief, Popov teaches a liquid-gas jet apparatus for evacuation/discharge of vapor-gas mediums. **Nowhere does Popov teach that any part of the apparatus is deformable or ever changes any of its dimensions while operating, or that any part of the apparatus is made of a deformable material.**

As also discussed in detail in the Appeal Brief, Blackshear teaches an implantable cardiac/heart jet pump device for replacing or assisting a disabled right heart in which the pressure source for the driving fluid of the jet pump is the left heart. **Blackshear teaches that the device is necessarily made of a rigid, non-flexing material in order to maintain the shape and alignment of the different parts of the device. Nowhere does Blackshear teach that any part of the device is deformable, or ever changes its dimensions, shape or alignment with regard to other parts of the device.** This is reinforced throughout Blackshear as noted on page 20 of the Appeal Brief. In fact, as noted on page 21 of the Appeal Brief, **Blackshear actually teaches away from making any part of the device of a deformable material. Furthermore, Blackshear teaches that there is no deformation of the driving nozzle contained within the device. Thus, there can be no automatic regulation of the flow rate of blood through the pump, no automatic decrease in the radius of the driving nozzle when the blood flowing within the nozzle experiences a backpressure, and no automatic increase in the radius of the nozzle**

**back to its original dimension when this backpressure is removed**, as would be the case if the device operated in the manner claimed by the Appellant.

Therefore, based on claim 1's non-obvious language recited on page 22 of the Appeal Brief, it should be clear that the Appellant's invention as claimed by claim 1 includes features not taught by Popov, or Blackshear, or the combination of Popov and Blackshear. It should also be clear that the Appellant's invention as claimed by claim 15 has advantages not appreciated by Popov, or Blackshear, or the combination of Popov and Blackshear. Thus, the Appellant's invention as claimed by claim 15 is patentably distinct from Popov, Blackshear, and the combination of Popov and Blackshear. Consequently, the rejection of claim 1 under 35 USC §103(a) is improper.

## **5.2 Dependent Claim 3 and Independent Claim 9**

Dependent claim 3 was rejected under 35 USC §103(a) based on the rationale that although Popov does not teach the feature of this claim, this feature is obvious over Blackshear. Independent claim 9 was rejected under 35 USC §103(a) based on the rationale that Popov teaches all the features of this claim with the exception of the feature in which "the automatically deformable nozzle regulator is constructed of a deformable material," but that this feature is obvious over Blackshear. The Appellant respectfully submits that these rejections of claims 3 and 9 are improper for the following reasons.

As discussed in foregoing sections 2.0 and 3.0, in claims 3 and 9 the **Appellant claims that the nozzle regulator is entirely constructed of a deformable material**. The advantages of this feature are discussed on page 13 of the Appeal Brief.

As discussed in foregoing section 5.1, **nowhere does Popov teach that any part of the apparatus is made of a deformable material. Blackshear teaches that the device is necessarily made of a rigid, non-flexing material. In fact, Blackshear actually teaches away from making any part of the device of a deformable material.**

Thus, based on claim 3's non-obvious language recited on page 24 of the Appeal Brief and claim 9's non-obvious language recited on page 26 of the Appeal Brief, it should be clear that the Appellant's invention as claimed by claims 3 and 9 includes a feature not

taught by Popov, or Blackshear, or the combination of Popov and Blackshear. It should also be clear that the Appellant's invention as claimed by claims 3 and 9 has advantages not appreciated by Popov, or Blackshear, or the combination of Popov and Blackshear. Thus, the Appellant's invention as claimed by claims 3 and 9 is patentably distinct from Popov, Blackshear, and the combination of Popov and Blackshear. Consequently, the rejection of claims 3 and 9 under 35 USC §103(a) is improper.

### 5.3 Dependent Claim 11

Dependent claim 11 was rejected 35 USC §103(a) based on the rationale that although Popov does not teach the feature of this claim, this feature is obvious over Blackshear. The Appellant respectfully submits that this rejection of claim 11 is improper for the following reasons.

As discussed in detail in the aforementioned Appeal Brief, in claim 11 the **Appellant claims** an automatically deformable nozzle regulator which includes a nozzle regulator cavity located between the outer cylinder and inner cylinder, where the nozzle regulator cavity is sealed at the inlet side of the nozzle regulator and open at the outlet side so that fluid only flows into the nozzle regulator cavity from the outlet side, and where **backpressure in the fluid within the nozzle regulator cavity generates a constricting force that causes the radius of the inner cylinder to decrease**. This results in the regulator's ability to automatically determine when additional suction force is needed at its inlet, and automatically decrease its output area accordingly. The advantages of this feature are discussed on page 11 of the Appeal Brief.

As discussed in foregoing section 5.1, **nowhere does Popov teach that any part of the apparatus is deformable or ever changes any of its dimensions while operating. Blackshear teaches that the device is necessarily made of a rigid, non-flexing material, and that there is no deformation of the driving nozzle contained within the device. Thus, there can be no change in the radius of the driving nozzle due to backpressure in the blood within the nozzle**, as would be the case if the device operated in the manner claimed by the Appellant.

Thus, based on claim 11's non-obvious language recited on page 28 of the Appeal Brief, it should be clear that the Appellant's invention as claimed by claim 11 includes a feature not taught by Popov, or Blackshear, or the combination of Popov and Blackshear. It should also be clear that the Appellant's invention as claimed by claim 11 has advantages not appreciated by Popov, or Blackshear, or the combination of Popov and Blackshear. Thus, the Appellant's invention as claimed by claim 11 is patentably distinct from Popov, Blackshear, and the combination of Popov and Blackshear. Consequently, the rejection of claim 11 under 35 USC §103(a) is improper.

#### **5.4 Independent Claim 15**

Independent claim 15 was rejected under 35 USC §103(a) based on the rationale that Popov teaches all the features of this claim with the exception of the feature in which an automatically deformable nozzle regulator, which is in fluid communication with a venturi throat and a cavity located at an outlet of the venturi throat, automatically adjusts its output area to further decrease the pressure in a cavity. However, the Examiner contends that this feature is obvious over Blackshear. The Appellant respectfully submits that this rejection of claim 15 is improper for the following reasons.

As discussed in foregoing section 4.0, in claim 15 the **Appellant claims** an outlet side regulated venturi pump for pumping fluid which includes, on its outlet side, an **automatically deformable nozzle regulator that automatically adjusts its output area to further decrease pressure in a cavity located inside the pump**. The advantages of this feature are discussed on pages 16 and 17 of the Appeal Brief.

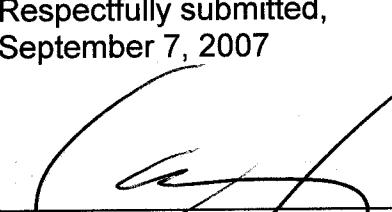
As discussed in foregoing section 5.1, **nowhere does Popov teach that any part of the apparatus is deformable or ever changes any of its dimensions while operating. Blackshear teaches that the device is necessarily made of a rigid, non-flexing material, and that there is no deformation of the driving nozzle contained within the device. Thus, there can be no change in the output area of the driving nozzle** for any reason whatsoever.

Thus, based on claim 15's non-obvious language recited on page 30 of the Appeal Brief, it should be clear that the Appellant's invention as claimed by claim 15 includes a feature not taught by Popov, or Blackshear, or the combination of Popov and Blackshear. It should also be clear that the Appellant's invention as claimed by claim 15 has advantages not appreciated by Popov, or Blackshear, or the combination of Popov and Blackshear. Thus, the Appellant's invention as claimed by claim 15 is patentably distinct from Popov, Blackshear, and the combination of Popov and Blackshear. Consequently, the rejection of claim 15 under 35 USC §103(a) is improper.

## 6.0 Summary

Based on the foregoing arguments, the Appellant respectfully submits that the rejection of claims 1, 3, 9-16 and 19 is erroneous. Therefore, the Appellant respectfully requests reversal of these rejections.

Respectfully submitted,  
September 7, 2007



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